

IN THE CLAIMS:

Please cancel claims 1-19 and add new claims 20-33, as shown below in the detailed listing of all claims which are, or were, in the application:

Claims 1-19 (Canceled)

20. (New) Method for biological decomposition of waste which contains organic matter, where said method comprises the steps of

- pre-treatment of said waste, and subsequent
- biological decomposition of the pre-treated waste in a decomposition reactor in the presence of anaerobic bacteria, wherein said pre-treatment step comprises fragmentation, homogenisation, and slurring of said waste into a liquid to bring said waste in a pumpable condition in a pre-treatment apparatus, which is a multi-ring double action impact mill, which comprises
- a housing equipped with a feed opening and a discharge opening,
- a first rotor disposed inside the housing, which rotor is equipped with blades having impact surfaces, and which blades form

at least one or more rings that are coaxial with the said rotor,
and

- a stator disposed inside the housing coaxially with the first rotor, or another rotor rotating in the opposite direction, and which stator or other rotor are equipped with blades having impact surfaces, these blades forming at least one or more rings fitted coaxially with the said stator or other rotor, and which rings are disposed so as to be staggered in relation to the ring or rings of the first rotor,

whereby the waste is fed through the feed opening of the pre-treatment apparatus into the hub of the rings formed by the blades, from where the waste is moved by the effect of a rotor or rotors to the ring formed by the outermost blades, and further to the discharge opening.

21. (New) The method according to claim 20, wherein the blades on the rotors or on the rotor and the stator are arranged in at least two rings.

22. (New) The method according to claim 21, wherein the waste comprises biologically degradable components containing solid matter and/or sludge.

23. (New) The method according to claim 22, wherein said components are selected from the group consisting of community waste, sludge from waste water purification plants, agricultural waste, waste from livestock husbandry, slaughter waste, waste from the fishing industry, gardening waste and waste from food industry.

24. (New) The method according to claim 20, wherein

- the waste pre-treatment step comprises forming a pumpable sludge from the waste, the sludge having a 10 - 30% dry matter content, whereby

- the necessary amount of liquid is added to the waste to form a sludge and,

- the waste is fragmented in the pre-treatment apparatus to a particle size wherein more than 95% of the particles are less than 5 mm in diameter, and that

- the decomposition of the waste comprises digestion of the sludge formed in the pre-treatment stage using anaerobic bacteria, where biogas comprising carbon dioxide and methane is produced.

25. (New) The method according to claim 24, wherein said liquid is selected from the group consisting of raw water, process water, waste water and sludge having high liquid content.

26. (New) The method according to claim 20, further comprising the step of adding to the waste flow entering and/or leaving the pre-treatment apparatus at least one of the following

- a decomposition promoting substance selected from the group consisting of anaerobic bacteria, catalysts, enzymes, pH regulators, viscosity modifiers, steam and combustion gases,

- microbe-containing process water that has been separated from the waste after pre-treatment, or during or after said decomposition treatment, and

- microbe-containing treated waste, derived from the pre-treatment apparatus or decomposition step, which waste is recycled to the feed opening of the pre-treatment apparatus.

27. (New) The method according to claim 20, wherein air is removed during the pre-treatment step from the waste to be pretreated for anaerobic decomposition treatment.

28. (New) The method according to claim 20, wherein said method comprises the following successive stages in which

- treated waste discharged from a pre-treatment step is degraded biologically in the decomposition step using anaerobic bacteria, so that biogas comprising methane and carbon dioxide is produced,

- liquid that is excessive for further treatment is separated from the solid matter left over from the decomposition step, and the remaining solid waste is conveyed to a second pretreatment step, to be treated in a pre-treatment apparatus, which is a multi-ring double-action impact mill, and

- the pretreated waste discharged from the second pretreatment step is degraded biologically in a second decomposition step using aerobic bacteria, or by gasifying the waste in a gasification reactor, so that a gas comprising carbon monoxide and hydrogen is formed, wherein said gas can be used as a fuel.

29. (New) The method according to claim 28, wherein the waste is treated during the second pre-treatment step by

- grinding the waste to a particle size suitable for the second decomposition treatment and
- aerating the waste by adding a drying agent during the second pre-treatment step.

30. (New) The method according to claim 20, wherein the method further comprises hydrolysing waste using hydrolysing bacteria in a hydrolysis reactor between the pre-treatment step and the decomposition step.

31. (New) The method according to claim 20, further comprising preparing the waste for pre-treatment by

- removing oversized metallic or other non-organic particles from the waste or
- crushing the oversized particles.

32. (New) The method according to claim 20, wherein the waste pre-treatment step is continuous and wherein the dwell time of the waste in the pre-treatment apparatus is less than 10 seconds.

33. (New) The method according to claim 20, wherein

- the waste is pretreated in said pre-treatment apparatus at either over- or underpressure and/or
- the temperature of the waste is raised in the pre-treatment apparatus.